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LIST OF ATTACHMENTS – MODULE II

The following Attachments are incorporated, in their entirety, by reference into this Permit. These incorporated attachments are enforceable conditions of this Permit. Some of the documents contain excerpts from the Permittee's Hazardous Waste Permit Application. The Department has, as deemed necessary, modified specific language excerpted from the permit application. Additional modifications are prescribed in the permit conditions (Parts I and II~~through V~~), and thereby supersede the language of the Attachments. Facility operations shall be in accordance with the contents of the Attachments and this Permit.

Attachment A~~A~~	Facility Description and Corrective Action Background
Attachment B	Facility Location Map
Attachment C	AOC-14 and AOC-15 Map
Attachment D	Site-Wide Corrective Action Remedial Cleanup Goals
~~Attachment JJ~~	~~List and Description of SWMUs, HWMUs, and AOCs~~
~~Attachment KK~~	~~Hazardous Constituents Sampling List and Risk-Based Concentration Screening~~
~~Attachment LL~~	~~RCRA Facility Investigation Requirements~~
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MODULE II
SITE-WIDE CORRECTIVE ACTION

II.A. CORRECTIVE ACTION FOR CONTINUING RELEASES; PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

II.A.1. Section 3004(u) of RCRA, 42 U.S.C. § 6924(u), and regulations codified at 40 CFR §264.101, provide that all permits issued after November 8, 1984 must require corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit (SWMU), regardless of when waste was placed in the unit.

II.A.2. Under Section 3004(v) of RCRA, 42 U.S.C. § 6924(v), and 40 CFR §264.101(c), the Department may require that corrective action at a permitted facility be taken beyond the facility boundary where necessary to protect human health and the environment, unless the owner or operator of the facility concerned demonstrates to the satisfaction of the Department that, despite the owner or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action.

II.A.3. Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3), and VHWMR Part XI, 9 VAC 20-60-1080(B) and 40 CFR § 270.32(b) provide that each permit shall contain such terms and conditions as the Department determines necessary to protect human health and the environment.

~~II.A.4. This Permit requires the Permittee to conduct a RCRA Facility Investigation (RFI) for potential or suspected releases of hazardous waste or hazardous constituents at specified SWMUs and Areas of Concern (AOCs) identified at the Facility. The RFI will be performed under two phases, a Phase I RFI and a Phase II RFI. The purposes of the Phase I RFI are to evaluate the nature and extent of potential or suspected releases from SWMUs and AOCs, to screen SWMUs and AOCs from further investigation, to focus the RFI, and to determine whether interim/stabilization measures are necessary. The purpose of the Phase II RFI is to thoroughly evaluate the nature and extent of suspected releases of hazardous waste and hazardous constituents, and their degradation by-products from regulated units, SWMUs, and any other AOCs at the Facility based upon the findings in the Phase I RFI. The RFI includes the collection of site specific data and an evaluation of potential impacts to human health and the environment from potential or suspected contamination from the Facility. The RFI will gather all data necessary for the Department to determine whether a Corrective Measures Study (CMS) is required. If, on the basis of the RFI findings and any other relevant information, the Department determines that a CMS is necessary, the~~

~~Permittee will be required to conduct a CMS for those releases from SWMUs or AOCs which threaten human health or the environment.~~

~~II.A.5. The Permittee may have completed some of the tasks required by this Permit and may have some of the information and data required by this Permit. Previous work may be used to meet the requirements of this Permit. Unless previously approved by the Department, such previous work must be submitted to and approved by the Department in accordance with Permit Conditions I.K. (Approval/ Disapproval of Submissions).~~

~~II.A.6. The Permittee shall prepare Facility-specific scopes of work and reports relating to Interim Measures, RCRA Facility Investigation, Corrective Measures Study and any Risk Screening or Risk Assessment in accordance with the relevant attachments. The Permittee shall establish specific and appropriate elements of such scopes and reports to the Department's satisfaction under Permit Conditions I.K. (Approval/ Disapproval of Submissions).~~

~~II.B. INTERIM MEASURES~~

~~II.B.1 The Permittee may, at any stage of the RFI, if applicable, submit to the Department, in writing, a proposal to perform corrective action interim measures for the remediation of any release of hazardous waste or hazardous constituent at or from a SWMU/AOC. Any such proposal shall include a schedule for performance of such interim measures. For any releases to soil, groundwater, sediment and surface water, the Permittee must demonstrate in such proposal, to the Department's satisfaction, that the subsurface conditions and contaminant plume relating to such release have been adequately characterized and that the proposed interim measures will adequately remove, contain, or treat the released hazardous waste or hazardous constituents as necessary to protect human health and the environment. The nature and extent of releases to other media shall likewise be adequately characterized and evaluated by the Permittee in such a proposal. The Department shall review such proposal and determine whether such a proposal will be considered for approval and whether such interim measures are of such scope that they require implementation of the public notice requirements specified under II.F.1., Corrective Measures Remedy Selection.~~

~~II.B.2 The Department shall notify the Permittee of the approval or disapproval of the interim measures proposal. If the Department approves such a proposal, the Permittee shall be allowed to dispense with certain stages of the investigation, as described in the Department's approval of the interim measures proposal. No term or condition of this Permit, except as otherwise provided for by this Permit, shall be affected by such proposal until such time as this Permit has been modified to include such proposal. As appropriate, the Department or the Permittee may seek modification of this permit pursuant to VHWMR 9 VAC 20-60 and 40 CFR § 270.41 or § 270.42 and § 124.5 to include such proposal.~~

~~II.B.3. If the Department determines, on the basis of information submitted by the Permittee pursuant to Permit Condition II.C. (RCRA Facility Investigation), II.H. (Emergency Response; Release Reporting), or II.J. (Solid Waste Management Unit Assessment) or any other information, that corrective action is necessary to protect human health or the environment from a release of hazardous waste or constituents from a SWMU/AOC, the Permittee may be required to implement Interim Measures.~~

~~a. Within sixty (60) calendar days of receipt of the Department's notice to implement corrective action Interim Measures at specified SWMUs/AOCs, the Permittee shall submit to the Department and the EPA Region 3 an Interim Measures Plan (Plan). The Plan must be approved by the Department in accordance with Permit Conditions I.K. (Approval/ Disapproval of Submissions) of this Permit. This Plan shall conform to the requirement of condition 1, Attachment NN - Interim Measure Requirements. Should the Permittee believe that any requirements of conditions 1 and 2, Attachment NN, are inappropriate for this SWMU/AOC, the Permittee shall identify the particular requirement and explain why the requirement is inappropriate.~~

~~b. According to the approved schedule, the Permittee shall submit to the Department the plans required by the Interim Measure Design Program, condition 2, Attachment NN. These plans must be approved by the Department in accordance with Permit Conditions I.K. (Approval/ Disapproval of Submissions) of this Permit.~~

~~c. According to the approved schedule, the Permittee shall submit to the Department for approval the reports required by condition 3, Attachment NN.~~

~~d. Nothing in this Permit shall preclude the Permittee from performing Interim Measures at any time either to reduce or eliminate the risk to human health or the environment, or to prevent or reduce the spread of contamination. Such measures, (*e.g.*, source removal, capping, groundwater pump and treat) may be taken at any time during the term of this Permit.~~

~~e. Nothing in this Permit shall limit the Department's authority to undertake or require any person to undertake response action or corrective action under any law, including but not limited to, Sections 10.1-1402.19 and 1455 of the Virginia Waste Management Act (1950), as amended. Nothing in this Permit shall relieve the Permittee of any obligation it may have under any Federal or State law, including, but not limited to, Section 103 of CERCLA, to report releases of hazardous waste, hazardous constituents or hazardous substances to, at, or from the Facility.~~

II.C RCRA FACILITY INVESTIGATION – PHASE I

II.C.1 Phase I RCRA Facility Investigation Submission

A Phase I RCRA Facility Investigation (Phase I RFI) is required to be submitted to the Department and the EPA Region 3 within ninety (90) calendar days of the issuance of this Permit. The Phase I RFI Plan must be approved by the Department in accordance with Permit Conditions I.K. (Approval/Disapproval of Submissions) of this Permit. The Phase I RFI Plan shall include each of the SWMUs and AOCs identified in Attachment JJ, as amended and as approved by the Department, and shall meet the following minimum objectives and requirements.

The Phase I RFI objectives are to:

a. Identify releases or suspected releases of hazardous waste and/or hazardous constituents into air, soil, sediments, surface water, and/or groundwater, which need further investigation to determine whether corrective measures are necessary to protect human health and the environment, and/or the implementation of Interim Measures at the Facility.

b. Identify actual or potential human and/or ecological receptors.

c. Provide a detailed geologic and hydrogeologic characterization of the area surrounding and underlying each SWMU/AOC.

d. Screen from further investigation those SWMUs and AOCs which do not pose a threat to human health or the environment.

e. Determine the need for and scope of corrective action interim measures (see Permit Section II.B. above).

II.C.2 Phase I RFI Plan Requirements

The Phase I RFI Plan shall fulfill the Phase I RFI Plan requirements specified in Attachment LL.

a. Phase I RFI Sampling Plan

i. The Phase I RFI Sampling Plan shall provide for the analyses for hazardous waste and hazardous constituents identified in Attachment KK. Also, any hazardous constituents not identified in Attachment KK that are known or suspected to have been treated, stored, disposed, or contained in the SWMU shall also be included for analysis.

ii. If information exists which fulfills the objectives of the Phase I RFI for any of the SWMUs or AOCs, the Permittee may include complete documentation in the Phase I RFI Plan.

iii. The Phase I RFI Sampling Plan shall fulfill the Phase I RFI Plan requirements specified in Attachment LL and comply with the quality assurance and quality control requirements of Attachment OO.

iv. The Phase I RFI Sampling Plan shall provide for the analyses of samples from any existing groundwater wells, both potable and non-potable, which exist at the Facility. The analyses shall include, at a minimum, an evaluation of volatile, semivolatile and inorganic hazardous constituent concentrations, plus pH. The analyses of groundwater shall include all constituents specified in 40 CFR Part 264, Appendix IX, Groundwater Monitoring List. (See **Attachment KK** for analytical requirements.)

II.C.3 Phase I RFI Report Requirements

a. Phase I RFI Report Submittal:

i. The Permittee shall fulfill the requirements of the approved Phase I RFI Plan in accordance with the terms and schedules set forth in the plan, including the submission of a Phase I RFI Report for the Department's approval.

ii. The Phase I RFI Report shall fulfill the requirements specified in Attachment LL, RCRA Facility Investigation (RFI) Requirements.

iii. The Phase I RFI Report shall include a discussion of the need for and the feasibility of implementing interim measures immediately, see conditions II.B., Interim Measures, and II.H., Emergency Response; Release Reporting.

iv. The Permittee shall submit copies of the Phase I RFI Report to the Department and the EPA Region 3.

b. In lieu of Permit Condition II.C.1, Phase I RCRA Facility Investigation Submission, the Permittee may elect to proceed with the Phase II RCRA Facility Investigation for any one of all of the identified SWMUs/AOCs. The Permittee shall notify the Department of such election no later than the time required for submission of the Phase I RFI Plan. In such case, the Permittee shall submit a Phase II RFI Plan for each such SWMU/AOC to the Department, for approval, and to the EPA Region 3, within ninety days of the

effective date of this Permit. Such Phase II RFI Plan shall meet the requirements of Permit Condition II.D.1 and 2, and Attachment LL, RCRA Facility Investigation Requirements.

II.D. RCRA FACILITY INVESTIGATION – PHASE II

II.D.1. Phase II RCRA Facility Investigation Plan Submission

In accordance with Permit Condition II.J.3., within ninety (90) days after the receipt of the Department's approval of a Phase I RCRA Facility Investigation (RFI) Report, the Permittee shall submit to the Department and the EPA Region 3, a Phase II RFI Plan.

The Phase II RFI Plan must be approved by the Department in accordance with Permit Conditions I.K. (Approval/Disapproval of Submissions Resolution). This Phase II RFI Plan shall meet the objectives and requirements specified below:

The Phase II RFI objectives are to:

a. Characterize the presence, magnitude, extent, direction, concentration and rate of migration of releases of hazardous waste or hazardous constituents from each SWMU/AOC into groundwater, surface water, air and/or soil.

b. Identify actual or potential human and/or ecological receptors.

c. Provide a detailed geologic and hydrogeologic characterization of the area surrounding and underlying each SWMU/AOC.

d. Determine the need for and scope of corrective measures.

e. Identify and characterize releases of hazardous waste or hazardous constituents, and hazardous constituent degradation by-products from SWMUs/AOCs listed in Attachment JJ as amended and as approved by the Department, and which have not been screened from further investigation under the Phase I RFI, as approved by the Department.

II.D.2. Phase II RCRA Facility Investigation Plan Requirements

a. The Phase II RFI Plan shall include a listing and general descriptions of the SWMUs/AOCs requiring further investigation, the identification of SWMUs and AOCs screened from further investigation in the Phase I RFI, the Project Management Plan, the Community Relations Plan, and the proposed schedule, and shall conform to the applicable requirements of Attachment LL, RCRA Facility Investigation Requirements.

~~Should the Permittee believe that any of the requirements of Attachment LL are not appropriate, the Permittee may submit a complete justification of the inappropriateness for the Department's approval within sixty (60) days of the effective date of this Permit. Such a submittal shall not stay the requirements of this Permit until and unless the Department has approved the submittal.~~

~~b. Phase II RFI Sampling and Analysis Plan~~

~~i. The Permittee shall submit a Phase II RFI Sampling and Analysis Plan (Plan). The Plan shall provide for analysis of hazardous waste and/or hazardous constituents released from each SWMU/AOC. (See Attachment KK for analytical requirements) All aqueous samples shall also be tested for pH. The analyses of groundwater shall include all constituents specified in 40 CFR Part 264, Appendix IX, Groundwater Monitoring List. Also, any hazardous constituent not listed in Attachment KK, that is known or suspected by the Permittee to have been treated, stored, disposed or contained in the unit, shall also be included for analysis. The Permittee may combine individual SWMUs/AOCs into study areas.~~

~~ii. The Phase II RFI Sampling and Analysis Plan shall provide the rationale for the selection of sample locations and number of samples. The Permittee shall identify the specific sampling locations for each SWMU/AOC and for each affected environmental media.~~

~~iii. The Phase II RFI Sampling and Analysis Plan shall include Sample Collection Methods and Procedures Plan and a Quality Assurance Project Plan (Attachment OO), which conform to the analytical requirements set forth in Attachments KK. The Permittee shall also furnish to the Department and the EPA Region 3 the Laboratory Data Package as specified in Attachment OO.~~

~~iv. The Department reserves the right to require the Permittee to furnish the Department with split samples for any samples taken by the Permittee pursuant to this Permit. Where split samples are taken and analyzed, the Department will provide the results to the Permittee for evaluation in the Phase II RCRA Facility Investigation Report. The Permittee shall identify a procedure in the Sampling Plan for notifying the Department of any planned sampling dates.~~

~~v. The Phase II RFI Sampling Plan must identify the management and disposition of any wastes generated as a result of the investigation. If any of the SWMUs/AOCs contain hazardous wastes, whether the hazardous wastes are regulated or not by federal or state regulations,~~

the Permittee shall comply with applicable regulations including the Land Disposal Restrictions as contained in 40 CFR Part 268.

II.D.3. Phase II RCRA Facility Investigation

a. The Permittee shall conduct the investigations specified in Attachment LL, RCRA Facility Investigation Requirments, which are necessary to characterize the Facility (Environmental Setting), define the source of any release of hazardous waste or hazardous constituents (Source Characterization), define the degree and extent of contamination (Contamination Characterization) and identify actual or potential receptors.

b. The investigations must result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative(s) during the Corrective Measures Study. The Permittee shall implement the plan requirements described in Permit Condition II.D.2.

II.D.4. Phase II RCRA Facility Reporting Requirements

a. The Permittee shall fulfill the requirements of the approved Phase II RFI Plan in accordance with the terms and schedule set forth in such approved plan, including the submission of a Phase II RFI Report for the Department's approval. The Permittee shall submit copies of the Phase II RFI Report to the Department and the EPA Region 3. The Permittee shall also submit bi-monthly (i.e., every two months) progress reports to the Department and the EPA Region 3, beginning two months after the Department's approval of the plan and continuing until the RFI Report is submitted. The bi-monthly reporting shall include, at a minimum: activities completed within the reporting period, any deviations from the Phase II RFI Plan, and the identification and schedule of remaining activities. The Department shall include any other specifications in its approval of the Phase II RFI Plan.

b. The Permittee shall submit in writing justification requesting an alternate progress reporting schedule for the Department's approval. This alternate progress reporting schedule may be approved by the Department without requiring a permit modification to Permit Condition II.D.4.

II.D.5. Phase II RCRA Facility Investigation Report

a. The Permittee shall submit a Phase II RCRA Facility Investigation (RFI) Report to the Department and the EPA Region. The Phase II RFI Report shall include an analysis, summary and results of all investigations performed pursuant to the Phase II RFI Plan. The Phase II RFI Report shall also summarize the salient findings under the Phase I Report. The objectives of the Phase II RFI Report are document that the investigation and data are

~~sufficient in quality (e.g., quality assurance and quality control (QA/QC) procedures have been followed) and scope (quantity) to adequately characterize the nature and extent of contamination, potential threat to human health and the environment, and to support the Corrective Measures Study. The Phase II RFI Report shall conform to the applicable RFI requirements of Attachment LL.~~

~~b. The Phase II RFI Report shall include a discussion of the need for and feasibility of implementing interim measures immediately, see Permit Conditions II.B, Interim Measures, and II.H., Emergency Response; Release Reporting.~~

~~II.E. CORRECTIVE MEASURES STUDY~~

~~II.E.1. If the Department determines, on the basis of the RFI or any other information, that corrective measures for releases of hazardous waste or hazardous constituents are necessary to protect human health or the environment, the Department will advise the Permittee of this determination, and the reasons therefore, in writing. The Permittee shall submit to the Department for approval a Corrective Measures Study (CMS) Plan within ninety (90) days of receipt of notification of such determination. Copies of the CMS Plan shall also be submitted to the DEQ and EPA Region 3. The CMS Plan shall include a schedule for expeditious performance of the study. The plan shall fulfill the requirements of Attachment MM, Corrective Measures Study Requirements, and must be approved by the Department, in accordance with Permit Conditions I.K (Approval/Disapproval of Submissions) of this Permit.~~

~~II.E.2. Within ninety (90) days of receipt of the Department's written approval of the CMS Plan, the Permittee shall begin implementation of the approved CMS Plan. In accordance with the terms and schedules in the approved CMS Plan, the Permittee shall submit for the Department's approval, a CMS Report which recommends a Corrective Measure(s) in accordance with the requirements set forth in Attachment MM of this Permit. Copies of the CMS Report shall also be submitted to the DEQ and EPA Region 3.~~

II.B~~F~~. CORRECTIVE MEASURES IMPLEMENTATION

II.B~~F~~.1. Background

Corrective actions are applicable to the Facility. Facility description, background, and environmental history are provided in Attachment A.

II.B.2. Final~~Corrective Measures~~ Remedy Selection

a. Based on the findings of historical investigations the Department concluded that historical releases have impacted soil and groundwater. Such releases have been abated and there are no ongoing releases to the surface or subsurface. Constituents detected in soils and groundwater consist of select organics and metals. Documentation for completion of investigation reports and studies have been compiled by the Department, entitled Administrative Record. Based on the RFI results and the Administrative Record, the Final Remedy for the Facility was developed and is described in the Statement of Basis. The requirements of this Permit provide for the implementation and operation and maintenance of the remedy described in the Statement of Basis.

b. The goal of the remedy for corrective action is to ensure protection of human health and the environment. The details of the final remedy are summarized below and are described in detail in the Administrative Record and Statement of Basis. Minor modifications in the activities, studies, techniques, procedures, and designs or schedules utilized in carrying out the requirements of this Permit and necessary for the completion of the remedy may be made by written agreement from the Department. Under this final remedy, the Department is requiring the following actions:

1. Conduct a groundwater monitoring program to confirm stabilization and/or reductions in hazardous constituents on-site. Groundwater monitoring shall be required until the remedial goals identified in Attachment D have been achieved and/or approved by the Department.

2. ~~Install and m~~Maintain an engineering control such as a cover at the AOC-14 and AOC-15 areas, identified on Attachment C. Conduct routine inspection and maintenance of the control, and place and maintain notification signs at the perimeter of the covered area.

3. Develop and maintain compliance with land use restrictions and institutional controls. Institutional controls will include:

   o The Facility shall not be used for residential purposes or for children's (under the age of 16) daycare facilities, schools, or playground purposes.

   o Excavation and disturbance of any soil at known impacated areas at the Facility shall be conducted in accordance with an agency approved Materials Management Plan.

   o Groundwater shall not be used for any purposes except for environmental monitoring and testing, or for non-contact industrial use as may be approved by the agency. Any new groundwater wells installed in the designated groundwater restriction area must be approved by the agency.

o Future modifications at the property that could be reasonably understood to adversely affect or interfere with the integrity or protectiveness of the final remedy will be evaluated to identify and address those potential impacts or interferences. No removal, disturbance, or alteration shall occur to any corrective action components installed at the property without agency approval.

~~a. Based on reports and information submitted by the Permittee during the RCRA Facility Investigation (RFI), Corrective Measures Study (CMS), and other relevant information, the Department may require the Permittee to evaluate further, and report upon, one or more additional remedies or develop particular elements of one or more proposed remedies. Such further requirements will, if necessary, be incorporated into this Permit pursuant to the 40 CFR § 270.41 or 270.42 as a Class 3 Permit Modification in accordance with the draft permit and public participation procedures of 40 CFR 124. The Permittee must follow all steps detailed in Attachment QQ and Attachment PP of this permit, if such additional evaluations and reports are needed to select a remedy.~~

~~b. All public comments shall be considered prior to selection and approval of the final Corrective Measures Remedy by the Department.~~

II.B~~F~~.3~~2~~ Final Remedy~~Corrective Measures~~ Implementation

a. Conduct the groundwater monitoring program to confirm stabilization and/or reductions in hazardous constituents on-site. Groundwater monitoring shall be conducted in accordance with a monitoring plan approved by the Department. Groundwater monitoring shall be required until the remedial goals identified in Attachment D have been achieved and/or approved by the Department.

b. The Permittee shall implement Institutional Controls through an environmental covenant pursuant to the Virginia Uniform Environmental Covenants Act (UECA), VA Code, §10.1-1238, et seq. and to be recorded with the deed for the property. A ~~declaration of restrictive covenants or similar instrument~~UECA Covenant consistent with applicable requirements under the laws of the Commonwealth of Virginia will be recorded with the real property records such that prospective purchasers of the property will have constructive notice of land use restrictions. The ~~declaration of restrictive covenants~~UECA Covenant will contain the land use controls described above and will be recorded with the land records in the office of the clerk of the circuit court for the jurisdiction in which the property is located. The current owner and future owners of the property will be obligated to comply with the recorded ~~restrictive covenant~~UECA Covenant since the covenant will run with the land.

c. The Permittee shall, at a minimum, provide the Department with metes and bounds descriptions or coordinate surveys for applicable land use restrictions that meet the following requirements:

i. Define the boundary of each use restriction as a polygon

ii. Establish the longitude and latitude of each polygon vertex as follows:
o Decimal degrees format
o At least seven decimal places
o Negative sign for west longitude
o WGS 1984 datum

~~a. Within ninety (90) days of receipt of the Department's written approval of the Corrective Measures Remedy, the Permittee shall submit a Corrective Measure Implementation (CMI) Work Plan for the Department's approval in accordance with the requirements set forth in Attachment QQ of this Permit. Upon approval of the CMI Work Plan, the Permittee shall submit the Corrective Measure Design Reports to the Department in accordance with the requirements set forth in Attachment QQ of this Permit.~~

~~b. The Corrective Measures Implementation Final Design Report shall be submitted to the Department as a Class 2 Permit Modification request in accordance with the requirements of 40 CFR § 270.42. Upon completion of the public notice and public meeting requirements and upon the Department's approval of the CMI Final Design Report, the Permittee shall develop and implement construction in accordance with procedures, specifications, and schedules in the approved Final CMI Design Report and CMI Work Plan in accordance with the requirements set forth in Attachment QQ of this Permit. Copies of all CMI Plans and CMI Design Reports and other CMI Reports shall be sent to the Department and EPA Region 3.~~

~~c. Upon completion of construction and upon an initial period of performance of monitoring the corrective measure(s), the Permittee shall prepare and submit copies of the final CMI Report to the Department and the EPA Region 3 which delineates the implemented corrective measures, design, operation and maintenance, and performance of the constructed system(s) and complies with the requirements delineated in Attachment QQ. Final "as built" plans and specifications of the corrective measures systems shall be certified by a Professional Engineer registered with the Commonwealth of Virginia and shall be submitted to the Department and the EPA Region 3 with the final CMI Report.~~

~~d. CMI Progress Reports shall be provided on a quarterly and annual basis to the Department and the EPA Region 3 as delineated in accordance with Attachment QQ.~~

II.CG. EVALUATION OF THE SELECTED REMEDY

TheCommencing one year following from the approvalsubmittal date of this modified Permit the final CMI Report, the Permittee shall submit an initialannual progress and groundwater report by March 1 on the remedy performance and groundwater monitoring results. Subsequent groundwater reports shall be submitted per the schedule in an approved groundwater monitoring plan. Subsequent remedy progress reports shall be submitted every 5 yearsas outlined in the UECA Covenant. If the Department determines that the selected remedy will not comply with the media clean-up requirements, the Department may require the Permittee to perform additional studies and/or perform modifications to the existing Corrective Action remedy. If necessary, the Department or the Permittee may seek modification of this Permit pursuant to 40 CFR § 270.41 or § 270.42 and § 124.5 to implement modifications to the existing Corrective Measures Remedy.

II.DH. EMERGENCY RESPONSE; RELEASE REPORTING

II.DH.1. Emergencies

If, at any time during the term of this Permit, the Permittee discovers that a release of hazardous waste or hazardous constituents at or from the Facility is presenting or may present an imminent and substantial endangerment to human health or the environment, and such release is not subject to Contingency Plan and Emergency Procedures as defined in the portion of the RCRA Permit issued by the Department, the Permittee shall:

a. Notify the Department as soon as practicable but verbally reported within 24-hours, of discovering the source, nature, extent, location and amount of such release, the endangerment posed by such release and the actions taken and/or to be taken, to the extent known, to address such release. Such notification shall be confirmed in writing within five (5) days of discovery of such release. (see Permit Requirements under Permit Condition I.D.11)

b. Unless otherwise directed by the Department, immediately take such actions as are necessary and appropriate to address such release.

II.DH.2. Releases

The Permittee shall notify Department in writing of the nature, source, extent, location of a release of hazardous waste or hazardous constituents at or from the Facility within five (5) days of discovery of such release which:

a. Is not being addressed by corrective measures pursuant to Permit Module II at

the time of such discovery.

b. Is not being addressed pursuant to Permit Conditions ~~II.B., Interim Measures, or~~ II.D~~H~~.1, Emergencies.

c. Is not subject to the Contingency Plan and Emergency Procedures as set forth in the portion of the RCRA Permit issued by the Department.

II.D~~H~~.3. Based on the information submitted ~~in Permit Condition II.H.2 (Releases),~~ the Department may require the SWMU/AOC to be included in an ongoing RCRA Facility Investigation or may require Interim Measures. ~~(see Permit Condition II.B.).~~

II.D~~H~~.4. Nothing in this Permit shall limit the Department's authority to undertake or require any person to undertake response action or corrective action under any law, including but not limited to, Sections 104 or 106 of CERCLA, 42 U.S.C. §§ 9604 or 9606, and Section 7003 of RCRA, 42 U.S.C. § 6973. Nothing in this Permit shall relieve the Permittee of any obligation it may have under any law, including, but not limited to, Section 103 of CERCLA, to report releases of hazardous waste, hazardous constituents or hazardous substances to, at or from the Facility.

II.E~~I~~. GUIDANCE DOCUMENTS

Any corrective action performed at the Facility shall be in accordance with applicable EPA Corrective Action Guidance available at: http://www.epa.gov/reg3wcmd/ca/ca_resources.htm.

~~In addition to guidance documents specified elsewhere in this Permit or Attachments, the following documents shall be referred to, as appropriate and utilized to meet the requirements of plans, reports, and corrective action measures required by this permit:~~

~~(Note: This list is not intended to be an all inclusive list of EPA guidance documents, but rather a list of the more commonly used guidance documents. This list does not preclude the use of any EPA guidance document.)~~

~~1. U.S. EPA, May 1978 (Rev. May 1986), NEIC Policies and Procedures, Office of Enforcement and Compliance Monitoring, National Enforcement Investigations Center. EPA-330/9-78-001-R, Denver, Colorado, 80225.~~

~~2. U.S. EPA, March 1987, Data Quality Objectives for Remedial Response Activities, Volume 1: Development Process, Volume 2: Example Scenario, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement. EPA 540/6-87/003a, OSWER Directive No. 9335.0-7B.~~

3. U.S. EPA, April 1989, Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells. EPA/600/4-89/034.

4. U.S. EPA, October 1986, RCRA Facility Assessment Guidance, Office of Solid Waste, OSWER Directive No. 9502.00-5.

5. U.S. EPA, May 1989, Interim Final RCRA Facility Investigation (RFI) Guidance, Volumes I - IV, Office of Solid Waste, OSWER Directive No. 9502.006D.

6. U.S. EPA, June 1988, Interim Final RCRA Corrective Interim Measures Guidance, Office of Solid Waste, EPA/530-SW-88-029, OSWER Directive No. 9902.4.

7. U.S. EPA, August 1991, Handbook - Stabilization Technologies for RCRA Corrective Actions, Center for Environmental Research Information, EPA/625/4-91/029.

8. U.S. EPA, November 1992, RCRA Ground-Water Monitoring; Draft Technical Guidance, Office of Solid Waste, EPA/530-R-93-001.

9. U.S. EPA, September 1986, RCRA Ground-Water Monitoring Technical Enforcement Guidance Document; NWWA/EPA Series (National Groundwater Association), NTIS No. PB87-107751.

10. U.S. EPA, May 1994, RCRA Corrective Action Plan; Office of Solid Waste, EPA 520-R-94-004, OSWER Directive No. 9902.3-2A.

11. Cohen, Robert M. and Mercer, James W. DNAPL Site Evaluation, (funded by U.S. EPA), 1993.

12. U.S. EPA, May 1995, Land Use in the CERCLA Remedy Selection Process; Office of Solid Waste, OSWER Directive No. 9355.7-04.

13. Any future Agency guidance provided by EPA to the Facility regarding Corrective Measure Studies, Design or Implementation.

II.FJ. SOLID WASTE MANAGEMENT UNIT (SWMU) ASSESSMENT

II.FJ.1. The Permittee shall notify the Department and the EPA Region 3, in writing, of any newly identified SWMU at the Facility, no later than thirty (30) days after the date of discovery. The notification shall include, but not be limited to, the following known information:

a. A description of the SWMUs type, function, dates of operation, location

(including a map), design criteria, dimensions, materials of construction, capacity, ancillary systems (e.g., piping), release controls, alterations made to the unit, engineering drawings, and all closure and post-closure information available, particularly whether wastes were left in place.

b. A description of the composition and quantities of solid wastes processed by the units with emphasis on hazardous wastes and hazardous constituents.

c. A description of any release (or suspected release) of hazardous waste or hazardous constituents originating from the unit. Include information on the date of release, type of hazardous waste or hazardous constituents, quantity released, nature of the release, extent of release migration, and cause of release (e.g., overflow, broken pipe, tank leak, etc.). Also, provide any available data that quantifies the nature and extent of environmental contamination, including the results of soil and/or groundwater sampling and analysis efforts. Likewise, submit any existing monitoring information that indicates releases of hazardous waste or hazardous constituents has not occurred or is not occurring. The Permittee may refer to information regarding releases previously submitted to the Department. ~~under Permit Condition II.H. (Emergency Response; Release Reporting) and II.B. (Interim Measures).~~

d. A discussion of the need for and feasibility of implementing interim measures immediately. ~~, see permit condition IV.B. (Interim Measures).~~

II.FJ.2. Upon receipt of the notification of any newly identified SWMU, the Department will determine the need for corrective action at such SWMU. If corrective action is necessary to protect human health or the environment, the Department will determine whether a RCRA Facility Investigation will be performed and the need for and scope of any Interim Measures.

II.FJ.3. Within ninety (90) days after the receipt of the Department's determination that a ~~approval of a Phase I~~ RCRA Facility Investigation ~~(RFI) Report~~ or Interim Measures is necessary, the Permittee shall submit to the Department and the EPA Region 3, a ~~Phase II RFI~~ RCRA Facility Investigation Work-Plan or Interim Measures Work-Plan that meets the applicable ~~guidance~~guidance ~~requirements of Permit Conditions II.D.1. and 2, respectively~~. The Department's determination shall either specify the media and/or parameters to be investigated or shall require the Permittee to propose and justify the selection of media and/or parameters.

II.FJ.4. Within the time specified in the approved RCRA Facility Investigation Work Plan, the Permittee shall submit the RCRA Facility Investigation Report or Interim Measures Report. ~~fulfilling the requirements of Permit Conditions II.D.3 through II.D.5.~~ The reports shall provide all data necessary for the Department to

determine whether a Corrective Measures Study or additional Interim Measures are required.

II.FJ.5. In lieu of a separate RCRA Facility Investigation, the Permittee may propose either to incorporate any newly identified SWMU into an ongoing RCRA Facility Investigation or to submit a proposal for the performance of corrective measures at such newly identified SWMU ~~in accordance with the provisions of Permit Condition II.A~~. Any such proposal shall be submitted to the Department along with notification of the discovery of the SWMUs.

II.GK. FINANCIAL ASSURANCE

The Department evaluated whether financial assurance for corrective action is necessary to implement the final remedy at the Facility. Given that the final remedy does not require any active remediation at this time and given that the costs for limited groundwater monitoring and implementing institutional controls at the Facility will be de minimus, financial assurance is not required.

~~II.K.1. Initial Cost Estimate~~

~~Assurances of financial responsibility for corrective action must be provided in accordance with conditions herein. Within ninety (90) calendar days of receipt of the Department's written approval of the Corrective Measures Remedy, the Permittee shall submit an initial cost estimate for completing the approved remedy(ies). The initial estimate may be based on the Corrective Measure Study, the approved remedy(ies), or any other available information.~~

~~II.K.2. Cost Estimate Updates~~

~~The cost estimate for completing the approved remedy(ies) shall be updated pursuant to the development of more detailed information (e.g., Corrective Measure Design) and any modifications to the approved remedy(ies).~~

~~II.K.3. Financial Assurance Demonstration~~

~~Within thirty (30) calendar days of approval of the initial cost estimate for financial assurance (see Permit Condition II.K.1.), the Permittee shall demonstrate compliance with financial assurance to the Department for completing the approved remedies in accordance with 40 CFR §264.101(b). Within thirty (30) calendar days of approval of any revised cost estimate (see Permit Condition II.K.2.), the Permittee shall demonstrate to the Department financial assurance for the updated cost estimates.~~

II.HL. RECORDKEEPING

~~Solid waste management units:~~

Upon completion of closure of any SWMU, the Permittee shall maintain in the Facility operating record, documentation of the closure measures taken.

II.I~~M~~. ACCESS FOR CORRECTIVE ACTION OVERSIGHT

The Department and its authorized representatives shall have access to the Facility at all reasonable times for the purpose of monitoring compliance with the provisions of this Permit. The Permittee shall use its best efforts to obtain access to property beyond the boundaries of the Facility at which corrective action is required by this Permit (see Section 3004(v) of RCRA, 42 U.S.C. § 6924(v) and 40 CFR 264.101(c)); (1) for itself and any contractor of the Permittee for the purpose of taking corrective action required by this Permit, and (2) for Department and its authorized representatives for the purposes described in this paragraph.

II.J~~N~~. COMPLETION OF REMEDY

Upon completion of the remedy or as needed in the interim, the Permittee shall request approval for abandonment of all monitoring wells, observation wells, and remediation wells from the Department prior to implementing well abandonment activities. All wells that are to be abandoned shall be plugged and abandoned in general accordance with 12VAC 5-630-420 and 12VAC 5-630-450. Chlorination of each well is not required. An effort to remove the well casing and associated materials shall be made at each well prior to abandonment. A report including methods and certification shall be submitted to the Department within thirty (30) days following the completion of abandonment. The Permittee may propose alternate methods for well abandonment and must obtain approval from the Department prior to implementation.

Within ten (10) days of receipt of notification by the Department that the remedy is complete, the Permittee shall submit a written certification to the Department ~~registered mail~~ stating that the remedy has been completed in accordance with the requirements of this Permit Modification. The certification must be signed by the Permittee and by an independent registered professional engineer registered in the Commonwealth of Virginia.

In cases where no other permit conditions remain, the Permit may be modified not only to reflect the completion determination, but also to change the expiration

date of the permit to allow earlier permit expiration in accordance with 40 CFR Parts 124, 270.41, and 270.42, as applicable.

Attachment A – Facility Description and Corrective Action Background

Corrective Action Permit

GRIFFIN PIPE PRODUCTS
EPA ID NO. VAD065417008

LYNCHBURG, VIRGINIA

FACILITY DESCRIPTION AND BACKGROUND

The Griffin Pipe facility is located in an industrial area along the banks of the James River in Lynchburg, Virginia. The Facility developed into its current industrial status throughout the late 1800s and early 1900s. At various times during the property's development, an ice plant and three separate foundries (described below) have been in operation on the property.

Lynchburg Foundry and Machine Works

The original foundry was known as the Lynchburg Foundry and Machine Works, and began operations in about 1882. Due to the lack of records, relatively little is known about the specifics of the Lynchburg Foundry and Machine Works' waste generation or waste handling procedures.

Glamorgan Pipe and Foundry Company

In 1883, the Lynchburg Foundry and Machine Works was renamed as the Glamorgan Pipe and Foundry Company. Existence of the foundry is first shown on the 1885 Sanborn map. The southern and western portions of the property during that time were developed by Adams Brothers & Payne and John P. Pettyjohn & Company for use as lumber yards and planing mills as evidenced on the Sanborn map. Between 1885 and 1951, the foundry operations at the property expanded, eventually occupying the entire property. Relatively little is known about the specifics of the waste generation or waste handling procedures at the property at this time.

Griffin Pipe Products Foundry

In 1971, Griffin Pipe Products took over the Glamorgan Pipe and Foundry Company. The Griffin Pipe Products Foundry has operated continuously since 1972, manufacturing ductile cast iron pipes for use in both potable water and sewer systems. The facility is capable of producing pipes that range from 3 to 16 inches in diameter and up to 18 feet in length. Previously, fittings and soil pipe were manufactured at the Lynchburg facility; however, these operations have been discontinued. In 2014, Griffin Pipe Products Company was purchased by U.S Pipe. Since then, the facility has been operating as Griffin Pipe Products DBA as U.S Pipe.

Facility Process

Griffin Pipe uses 100% scrap metal in their pipe making operation. Scrap metal is received at the facility primarily by truck and consists of scrap automobiles and other shredded steel. The scrap metal is melted in a cupola with coke, dolomite limestone, and other additives to produce molten iron. The molten iron then goes through a desulfurization process which is conducted in a "bubbling ladle." Powdered lime and fluorspar are added to the molten iron. Sulfur adsorbs to the lime, forming a layer of "slag" on top of the molten iron, allowing for easy removal. Liquid nitrogen is then added to the "bubbling ladle" which causes a bubbling effect that mixes the contents and keeps the mixture consistent. Once the sulfur has been skimmed from the molten iron, it is transferred to a holding furnace, or "forehearth." The molten iron is then placed into a "pouring ladle" which contains carbon, silica, and scrap pipe. The scrap pipe is used to reduce the temperature of the molten iron since it is at a higher temperature in the cupola than is desired for the casting process.

After the desulfurization process, magnesium is added to the molten iron in the pouring ladle by way of a "plunging block," which results in a chemical reaction necessary for the production of ductile iron. The molten iron is then transferred to one of the facility's three casting machines. The ductile iron pipes are centrifugally cast in metal molds cooled by water. Once the pipes have been cast, they are transferred to a pressure pipe annealing oven. After a 45-minute cycle in the oven, the pipes have completed the ductile process. After leaving the annealing oven, the pipes are conveyed through a water spray cooling process to reduce temperature.

After exiting the cooling process, the pipes are sent to the finishing line where the spigot and bell ends of the pipe are cut and ground if necessary. The pipes are then pressure tested, weighed, and lined with cement. The pipes are then transferred to the painting lines where the pipes are painted inside and out with an asphalt-based paint.

Physical Setting

The Facility is located on a wedge of fill and adjacent to the James River. Sanborn Maps indicate this area was industrial and the fill was in place prior to 1885. The fill is generally a silty sand consistency. Alluvial sediments deposited by the ancestral James River underlie the fill. The sediments are generally sands and gravels. More recent river sediments are deposited along the riverbank at the Facility. Crystalline bedrock (Biotite Gneiss – Ashe Formation) underlies the sediments. The water table lies within the fill on the Facility. Groundwater flows towards the James River with some downstream flow component.

The majority of the Facility is capped with hardscape consisting of buildings and pavement and located within the James River floodplain. The Facility is bounded on the north and east by the James River and on the west by a railroad yard and a bluff that rises out of the floodplain. The southern portion of the Facility is bounded by other industrial property. The Facility is fenced on the west and south and access is restricted by a guard

house and gate. The James River side of the Facility is protected by a steep overgrown river bank with no trespassing signs.

SUMMARY OF ENVIRONMENTAL HISTORY

The Phase I RCRA Facility Investigation (RFI) identified a number of solid waste management units (SWMUs) and Areas of Concern (AOCs) at the Facility. The following table lists each SWMU and AOC.

SWMU and AOC Identification Table

Identification	SWMU/AOC Name
SMWU-1	Harsell Cupola Baghouse
SWMU-2	Harsell Baghouse Treatment Unit
SWMU-3	90-day Hazardous Waste Accumulation Area
SWMU-4	Former Holding Area for Treated Baghouse Dust
SWMU-5	Solid Waste Bin
SWMU-6	Cement Settling Basins
SWMU-7	Holding Area for Baghouse Dust
SWMU-8	Roll-off Box
SWMU-9	Leaking Piping from Fuel Oil Aboveground Storage Tank
SWMU-10	Temporary Solid Waste Staging Area
SWMU-11	Old GMD baghouse
SWMU-12	Waste units from former Fittings Foundry
SWMU-13	ETA Baghouse
SWMU-14	GMD Baghouse
SWMU-15	Grinding Dust Collector
SWMU-16	Metal Scrap Dumpster
SWMU-17	Waste Dumpster
SWMU-18	Slag Piles
SWMU-19	Lime Slag Storage Area
SWMU-20	Used Oil Storage Areas
SWMU-21	Groundwater Treatment System Recovery Tank
SWMU-22	Satellite Accumulation Area #1
SWMU-23	Satellite Accumulation Area #2
SWMU-24	Satellite Accumulation Area #3
SWMU-25	Former Incinerator
SWMU-26	Universal Waste Storage Area
SWMU-27	General Refuse Dumpster #1
SWMU-28	General Refuse Dumpster #2
SWMU-29	Casting Ditch Recycle System
AOC-1	Stormwater System
AOC-2	Raw Materials Pile #1
AOC-3	Raw Materials Pile #2

AOC-4	Raw Materials Pile #3
AOC-5	Raw Materials Pile #4
AOC-6	Raw Material Silo #1
AOC-7	Raw Material Silo #2
AOC-8	Raw Material Silo #3
AOC-9	Raw Material Silo #4
AOC-10	Paint Storage Area
AOC-11	Fittings Foundry Paint Dip Tanks
AOC-12	Mill Room Paint Dip Tanks
AOC-13	Cupola Used Oil Tank
AOC-14	Paint line #1
AOC-15	Paint line #3
AOC-16	Machine Shop Parts Cleaner
AOC-17	Finishing Area Parts Cleaner
AOC-18	Diesel AST
AOC-19	Sanitary System
AOC-20	Former Fluorescent Bulb Crusher
AOC-21	Small-quantity Paint / Oils Storage Area
AOC-22	Oil Storage Building
AOC-23	Oil/Water Separator
AOC-24	Former AST-1
AOC-25	Former AST-2
AOC-26	Former AST-3
AOC-27	Former AST-4
AOC-28	Gasoline AST
AOC-29	Former UST-1R
AOC-30	Former UST-2R
AOC-31	Former UST-3R
AOC-32	Former UST-4R
AOC-33	Former UST-5R
AOC-34	Former UST-6-Asphalt
AOC-35	Former UST-6-Heating Oil
AOC-36	Former Resin and Acid Tanks
AOC-37	Hydraulic Shear and Oil Sump
AOC-38	Existing Electrical Substation
AOC-39	Former Hydro Plant Transformers
AOC-40	Former Oil Storage Area
AOC-41	Compressor Room
AOC-42	Cement Sump
AOC-43	Overall Facility Cooling System
AOC-44	Fittings Foundry Sand Silos

* Shaded SWMUs and AOCs - Based on operating history and records, it was determined by VDEQ during the Phase I RFI that no further investigation or action was necessary for these SWMUS/AOCs in order to meet the goals of the Corrective Action program.

Below is a summary of the Facility's closure activities and environmental investigations.

RCRA Permitting and Closure Activities

On June 27, 1986, the facility was issued a Hazardous Waste Management Permit for the Storage and Treatment of Hazardous Waste (EPA ID No. VAD065417008) which provided for the storage of the Harsell baghouse dust (characteristic waste codes D006 and D008) in the Harsell baghouse steel hoppers. The Permit was renewed and effective May 15, 1997. The hazardous waste managed under this Permit was limited to the two process wastes which included the cupola dust emissions generated in the iron melting process and the dust emissions generated during the molten iron desulphurization and magnesium treatment process. Used air pollution control bags were also identified as hazardous waste due to the accumulated dust that permeated the bags.

The VDEQ received notification from Griffin Pipe on October 13, 2005 that no additional hazardous wastes would be treated in the facility and that closure would be initiated. Griffin Pipe notified the VDEQ that the installation of the in-duct dust treatment system and construction of a new melting baghouse had rendered the permitted activity unnecessary because the dusts that were generated were non-hazardous.

On November 20, 2006, Clayton Group Services (Clayton), on behalf of Griffin Pipe, submitted the RCRA Clean Closure Report (Closure Report) of the Harsell Baghouse. The report documented on-site closure activities that commenced on July 24, 2006 and were completed on September 27, 2006. Upon review of the closure activities and completion of a site visit, the VDEQ approved the Closure Report associated with the Harsell Baghouse (SWMU-1 and SWMU-2) in a letter dated April 5, 2007.

Subsequently, the Griffin Pipe facility was required to maintain a facility permit under the corrective action (CA) requirements of the Virginia Hazardous Waste Management Regulations (VHWMR) and RCRA. Therefore, on May 16, 2007, Griffin Pipe submitted Parts A and B of the Hazardous Waste Permit Application. The final Hazardous Waste Management Permit for Corrective Action was issued on November 30, 2007, effective until November 30, 2017.

RCRA Facility Investigation Activities

Soil

Soil samples were collected at the Facility during several events between January and June 2010 by the Facility's consultant as part of the Phase I RFI in accordance with the Phase I RFI Workplan – Revision 02 dated August 2009. During the Phase I RFI, 26 shallow soil borings were installed as part of the investigation of nine SWMUs and eleven AOCs at the Facility. The results of this investigation were presented to VDEQ in the Phase I RFI Report dated June 17, 2011. The Phase I RFI revealed that additional

investigation was necessary, therefore the facility submitted a Phase II RFI Workplan to VDEQ on December 16, 2011 which was approved on February 23, 2012.

Additional soil samples were collected at AOC-14 (Paint Line #1) in June 2013 during the Phase II RFI to confirm the elevated lead concentrations detected at a specific sample location during the Phase I RFI. This work was conducted in accordance with the Phase II RFI Workplan – Part I Additional Field Sampling. The results of this investigation were presented to VDEQ in the Phase II RFI Report – Part I Additional Field Sampling – Lead Evaluation, dated July 26, 2013. Concentrations in soil samples were detected below the EPA Regional Screening Level (RSL) for lead (800 mg/kg), therefore the evaluation did not confirm the presence of elevated lead concentrations at AOC-14.

Additional confirmation soil samples were collected in January 2015 in accordance with the RCRA Corrective Action – Confirmation Sampling Work Plan, dated October 2014. The results of this confirmation sampling investigation were presented to VDEQ in the RCRA Corrective Action Confirmation Sampling Report, dated June 2015. Four SWMUs and two AOCs were sampled and analyzed for select SVOCs and metals. The confirmation sample results reported were less than their initial sample concentrations, with the exception of only sample (A2-5-1), which reported a lead concentration equal to the previous detection.

The facility's consultant submitted the Adult Lead Methodology (ALM) evaluation for the Facility to VDEQ on February 18, 2016. The ALM evaluation proposed the use of a preliminary remediation goal (PRG) of 2,240 parts per milligrams per kilogram (mg/kg) for the Facility. The lead concentrations at the Facility range from 9 to 1,400 mg/kg, and therefore lead was recommended to not be carried forward as a constituent of concern (COC) for Facility soils under RCRA Corrective Action. VDEQ approved the ALM evaluation for the Facility in a letter dated July 21, 2016.

Groundwater

The Phase I RFI activities in 2010 included the installation of three new monitoring wells and eight replacement monitoring wells to the existing network which was utilized for purposes of investigating historical petroleum releases. Aqueous samples were collected from a total of twenty monitoring wells and one non-potable water supply well.

Due to the detection of SVOCs and metals and at the request of VDEQ, additional groundwater samples were collected from 16 monitoring wells in September 2012 during the Phase II RFI. This work was conducted in accordance with the Phase II RFI Workplan – Part I Additional Field Sampling. The results of this investigation were included in the Phase II RFI Report – Part I Additional Field Sampling for Groundwater, Surface Water, and Sediment, dated May 21, 2013.

EPA and VDEQ utilize drinking water standards, namely EPA drinking water Maximum Contaminant Levels (MCLs), or tap water RSLs for constituents that do not have an MCL, for groundwater data screening purposes. The results of the groundwater evaluations are as follows:

- No VOCs or PCBs were detected in the groundwater samples above their respective screening criteria.
- The following SVOCs were identified in at least one location in exceedance of applicable screening criteria: benz(a)anthracene; 2-methylnaphthalene; 1,1-biphenyl; bis(2-ethylhexyl)phthalate; dibenz(a,h)anthracene; dibenzofuran; indeno(1,2,3-cd)pyrene; and naphthalene. These SVOCs are suspected to be related to historical petroleum releases and associated Pollution Complaints (PCs) described later in this document.
- The following metals were identified in at least one location in exceedance of screening criteria: arsenic; cobalt; lead; nickel; and vanadium.

Surface Water and Sediment

A total of eight surface water samples were collected from the James River in September 2012 during the Phase II RFI. The results of this investigation were included in the Phase II RFI Report – Part I Additional Field Sampling for Groundwater, Surface Water, and Sediment.

No Polycyclic Aromatic Hydrocarbons (PAHs) or PCBs were detected in the sediment samples above their respective EPA Biological Technical Assistance Group (BTAG) or VDEQ RCRA screening values. Two metals, arsenic and barium, were identified in at least one location in exceedance of EPA BTAG or VADEQ RCRA screening criteria. The arsenic and barium screening level exceedances were detected at similar concentrations in all surface water samples collected (i.e., upgradient, mid-point and downgradient) and therefore are not a result of Facility activities.

A total of eight sediment samples were collected from the James River in September 2012 during the Phase II RFI. The results of this investigation were presented to VADEQ in the Phase II RFI Report – Part I Additional Field Sampling for Groundwater, Surface Water, and Sediment.

Samples were collected from upgradient, mid-point and downgradient locations. The upgradient location is considered representative of conditions of the river prior to any potential release from the Facility. The mid-point and downgradient locations were selected to determine any potential releases from the Facility.

No PCBs were detected in the sediment samples above their respective EPA BTAG screening values. Only one PAH, benz(a)anthracene, was identified at one location in exceedance of EPA BTAG screening criteria. Only one metal, zinc, was identified in at one location in exceedance of EPA BTAG screening criteria. The benz(a)anthracene and zinc screening level exceedance were detected at the duplicate upgradient sample location (i.e., U-2 Duplicate) and not detected in the original U-2 sample. Additionally, there were no exceedances of the BTAG screening criteria in the mid-point and downgradient locations. The upgradient sample location is not considered to be influenced by the Facility, therefore, the sediment samples are considered below screening criteria and no further action is required.

Storage Tanks

A wide variety of tank storage units have been actively used over the life of the Facility. Currently, the Facility has removed all but one known Underground Storage Tanks (UST), and replaced them with Aboveground Storage Tanks (ASTs). A 3,500-gallon asphalt UST (UST-6R) is the only existing UST and was abandoned in place. The tanks have been used to store gasoline, heating oil, xylene, used oil, motor oil, lube oil, and asphalt, The Phase I RFI Work Plan provides additional operational descriptions, locations, and removal history of the major former USTs and ASTs at the Facility.

Historical Releases and Pollution Complaints

A number of various releases have been documented at the Facility since 1989. Most of the releases were minor events which were immediately corrected by the Facility. The Phase I RFI Work Plan provides information for the known historical releases.

Two historical releases documented in 1989 and 1991 resulted in Pollution Complaint (PC) numbers 1990-0578 and 1991-0122, respectively. PC number 1990-0578 was associated with a leak from a steel gasoline UST (AOC-29) and was closed in 2002 after remedial endpoints were met and VDEQ determined no further action was necessary.

PC number 1991-0122 is believed to be a release from an underground pipeline near the "Lunchroom Area" and was first detected as an oily sheen seeping from the river bank adjacent to the Facility. Griffin Pipe installed and operated a product recovery system until September 2007 and has since continued to periodically remove product manually using absorbent material. PC Number 1991-0122 is still being addressed under the VDEQ petroleum program.

A third release documented in 2008 resulted in PC number 2009-7045. The release was discovered at a fuel oil dispenser during a routine inspection. Griffin Pipe performed an investigation and subsequently found free petroleum product. PC number 2009-7045 was addressed by the Faciity and closed by VDEQ in 2011.

Risk Assessment

A risk assessment was completed and included as part of the 2016 Comprehensive Site Report – Revision 1, dated March 2017. The risk assessment was completed on soils data collected at nine SWMUs and eleven AOCs during the RFI.

An initial screening evaluation of the soils data was performed which utilized the EPA Regional Screening Levels (RSL) for Industrial Soil, May 2016 version. The results of the screening indicated:

- No Volatile Organic Compounds (VOCs) or Polychlorinated Biphenyls (PCBs) were detected in the soil samples above their respective EPA Industrial RSL.
- The following Semi-Volatile Organic Compounds (SVOCs) were identified in at least one location in exceedance of their respective Industrial RSL:

benz(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenz(a,h)anthracene; and indeno(1,2,3-cd)pyrene.

- The following metals were identified in at least one location in exceedance of their respective Industrial RSL: arsenic; cobalt; hexavalent chromium; and lead.

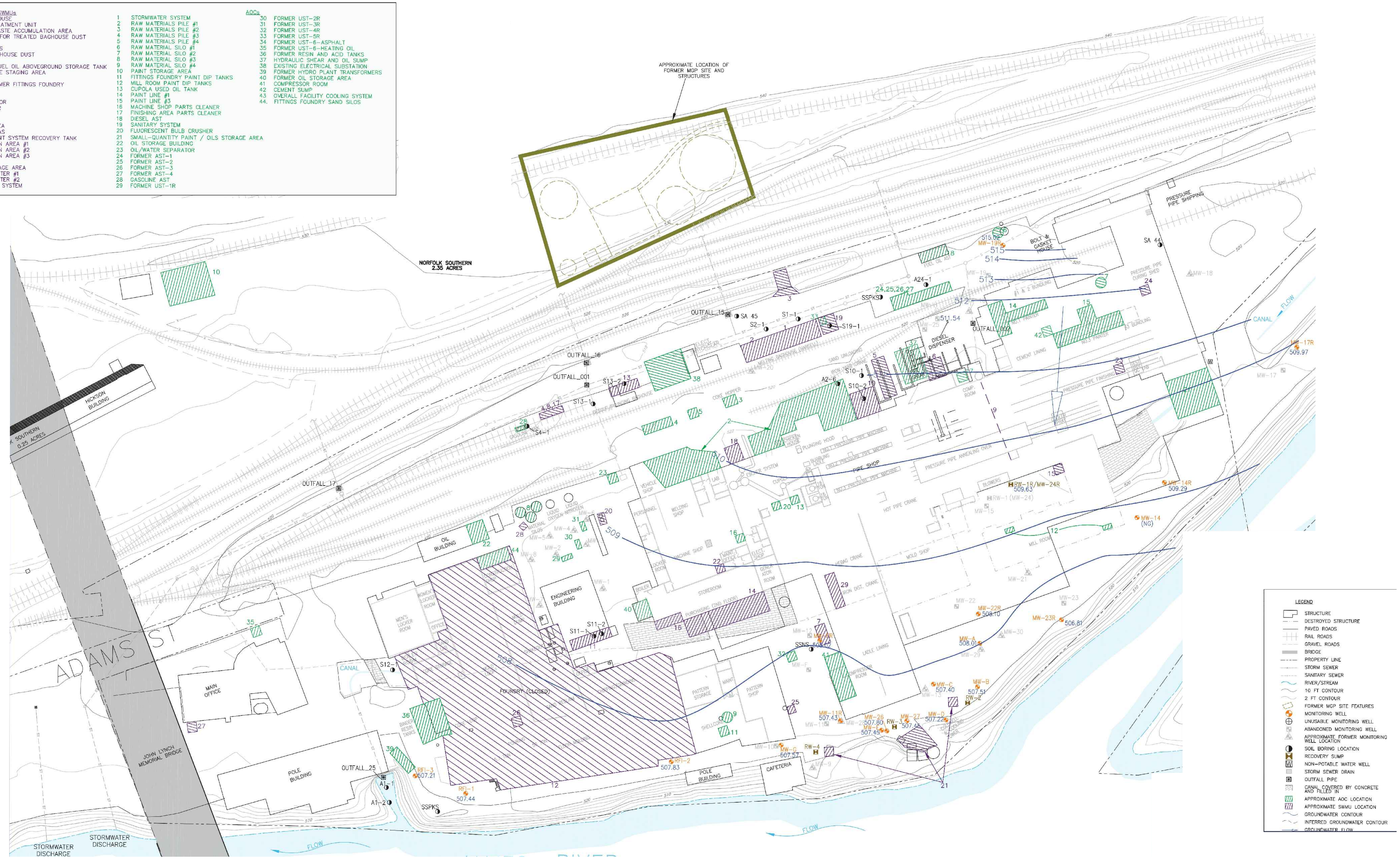
The SVOCs and metal which had at least one exceedance of their respective Industrial RSL were retained for further evaluation. Additionally, soils samples which were diluted by the laboratory and resulted in analytical detection limits higher than screening critieria were also carried forward for further evaluation.

The quantitative risk assessment was performed using the REAMS 2.1.2 or VURAM 1.11 software. VURAM was developed by VADEQ in 2016 to replace REAMS. Results of the REAMS and VURAM risk analysis, which include individual and cumulative risks and hazards for constituents of concern (COCs), were compared to the following limits:

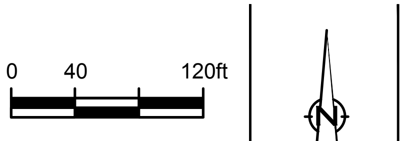
- Total cumulative hazard index of 1.0 or less for non-carcinogens;
- Total cumulative risk of 1E-04 or less for all carcinogens.

The total risk and total hazard index results were within acceptable limits for all SWMUs and AOCs, except for AOC-14 and AOC-15. Therefore, the soil for all areas except AOC-14 and AOC-15 is considered acceptable for industrial exposure at the Facility. DEQ approved the results of the risk assessment in a letter dated April 6, 2017.

SWMUs		AOCs	
1	HARSELL CUPOLA BAGHOUSE	1	STORMWATER SYSTEM
2	HARSELL BAGHOUSE TREATMENT UNIT	2	RAW MATERIALS PILE #1
3	90-DAY HAZARDOUS WASTE ACCUMULATION AREA	3	RAW MATERIALS PILE #2
4	FORMER HOLDING AREA FOR TREATED BAGHOUSE DUST	4	RAW MATERIALS PILE #3
5	SOLID WASTE BIN	5	RAW MATERIALS PILE #4
6	CEMENT SETTLING BASINS	6	RAW MATERIAL SILO #1
7	HOLDING AREA FOR BAGHOUSE DUST	7	RAW MATERIAL SILO #2
8	ROLL-OFF BOX	8	RAW MATERIAL SILO #3
9	LEAKING PIPING FROM FUEL OIL ABOVEGROUND STORAGE TANK	9	RAW MATERIAL SILO #4
10	TEMPORARY SOLID WASTE STAGING AREA	10	PAINT STORAGE AREA
11	OLD ETA BAGHOUSE	11	FITTINGS FOUNDRY PAINT DIP TANKS
12	WASTE UNITS FROM FORMER FITTINGS FOUNDRY	12	MILL ROOM PAINT DIP TANKS
13	ETA BAGHOUSE	13	CUPOLA USED OIL TANK
14	GMD BAGHOUSE	14	PAINT LINE #1
15	GRINDING DUST COLLECTOR	15	PAINT LINE #3
16	METAL SCRAP DUMPSTER	16	MACHINE SHOP PARTS CLEANER
17	WASTE DUMPSTER	17	FINISHING AREA PARTS CLEANER
18	SLAG PILES	18	DIESEL AST
19	LIME SLAG STORAGE AREA	19	SANITARY SYSTEM
20	USED OIL STORAGE AREAS	20	FLUORESCENT BULB CRUSHER
21	GROUNDWATER TREATMENT SYSTEM RECOVERY TANK	21	SMALL-QUANTITY PAINT / OILS STORAGE AREA
22	SATELLITE ACCUMULATION AREA #1	22	OIL STORAGE BUILDING
23	SATELLITE ACCUMULATION AREA #2	23	OIL/WATER SEPARATOR
24	SATELLITE ACCUMULATION AREA #3	24	FORMER AST-1
25	FORMER INCINERATOR	25	FORMER AST-2
26	UNIVERSAL WASTE STORAGE AREA	26	FORMER AST-3
27	GENERAL REFUSE DUMPSTER #1	27	FORMER AST-4
28	GENERAL REFUSE DUMPSTER #2	28	GASOLINE AST
29	CASTING DITCH RECYCLE SYSTEM	29	FORMER UST-1R
		30	FORMER UST-2R
		31	FORMER UST-3R
		32	FORMER UST-4R
		33	FORMER UST-5R
		34	FORMER UST-6-ASPHALT
		35	FORMER UST-6-HEATING OIL
		36	FORMER RESIN AND ACID TANKS
		37	HYDRAULIC SHEAR AND OIL SUMP
		38	EXISTING ELECTRICAL SUBSTATION
		39	FORMER HYDRO PLANT TRANSFORMERS
		40	FORMER OIL STORAGE AREA
		41	COMPRESSOR ROOM
		42	CEMENT SUMP
		43	OVERALL FACILITY COOLING SYSTEM
		44.	FITTINGS FOUNDRY SAND SILOS



Source: GES SITE PLAN DATED 3-12-09



GRIFFIN PIE PRODUCTS
10 ADAMS STREET
LYNCHBURG, VIRGINIA

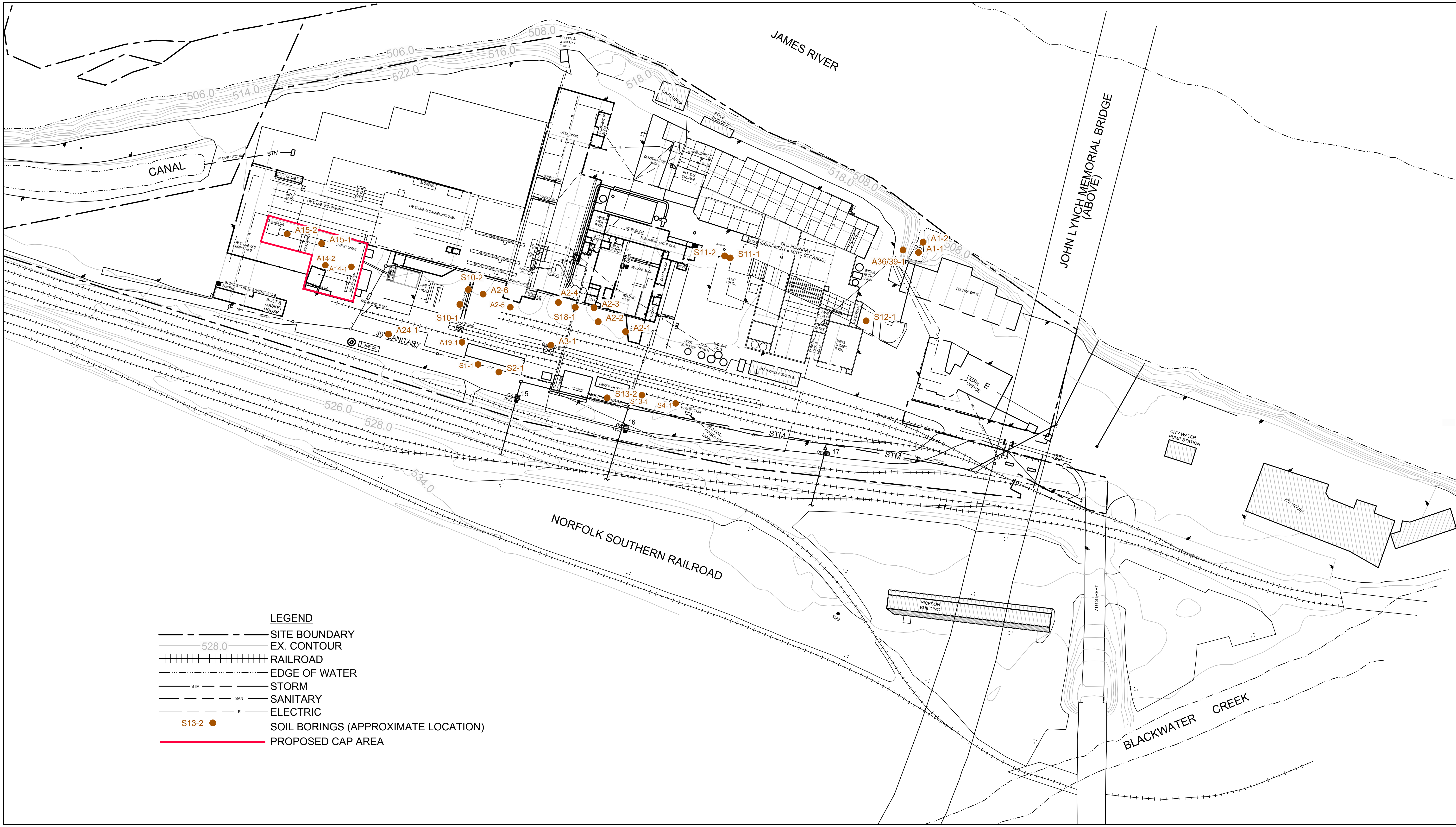
SITE PLAN

11109595-004

Jun 27, 2017

ATTACHMENT B

CAD File: I:\drawings\11100000s\11109595\11109595-PRES\11109595-004(PRES003)\11109595-004(PRES003)GN\11109595-004(PRES003)GN-DE001.dwg



0 75 150ft

GRIFFIN PIPE PRODUCTS
10 ADAMS STREET
LYNCHBURG, VIRGINIA

PROPOSED CAP AREA

11109595-004

Jun 27, 2017

ATTACHMENT C

CAD File: I:\drawings\11100000s\11109595\11109595-PRES\11109595-004(PRES003)\11109595-004(PRES003)GN\11109595-004(PRES003)GN-DE002.dwg

Attachment D – Site Wide Corrective Action Remedial Cleanup Goals

Constituent	Remedial Goal*	Basis
Arsenic	Highest of 10 ug/L, background or other VDEQ approved risk-based criteria.	EPA Drinking Water MCL
Cobalt	Highest of 6 ug/L, background or other VDEQ approved risk-based criteria.	EPA Tap Water RSL
Lead	Highest of 15 ug/L, background or other VDEQ approved risk-based criteria.	EPA Drinking Water MCL
Nickel	Highest of 39 ug/L, background or other VDEQ approved risk-based criteria.	EPA Tap Water RSL
Vanadium	Highest of 86 ug/L, background or other VDEQ approved risk-based criteria.	EPA Tap Water RSL
benz(a)anthracene	Highest of 0.12 ug/L, background or other VDEQ approved risk-based criteria.	EPA Tap Water RSL
2-methylnaphthalene	Highest of 36 ug/L, background or other VDEQ approved risk-based criteria.	EPA Tap Water RSL
1,1-biphenyl	Highest of 0.83 ug/L, background or other VDEQ approved risk-based criteria.	EPA Tap Water RSL
bis(2-ethylhexyl)phthalate	Highest of 6 ug/L, background or other VDEQ approved risk-based criteria.	EPA Drinking Water MCL
dibenz(a,h)anthracene	Highest of 0.0034 ug/L, background or other VDEQ approved risk-based criteria.	EPA Tap Water RSL

dibenzofuran	Highest of 7.9 ug/L, background or other VDEQ approved risk-based criteria.	EPA Tap Water RSL
indeno(1,2,3-cd)pyrene	Highest of 0.034 ug/L, background or other VDEQ approved risk-based criteria.	EPA Tap Water RSL
naphthalene	Highest of 0.17 ug/L, background or other VDEQ approved risk-based critiera.	EPA Tap Water RSL

ug/L = micrograms per liter

* The remedial goal is achieved when the concentration does not exceed the highest of the criteria referenced. The Facility may elect to establish site-specific background concentrations in accordance with established procedures, and utilize the site-specific background concentrations as the remedial goal upon approval by VDEQ. Alternatively, VDEQ may approve other risk-based criteria as the remediation goal.